

# **New Media, Old Media**

A History and Theory Reader

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## RELAYING THE ATLANTIC CABLE

### SUBMERGED HISTORIES OF UNDERSEA NETWORKS

*Nicole Starosielski*

Anyone who thinks that wild-ass high tech venture capitalism is a late-20th-century California phenomenon needs to read about the maniacs who built the first transatlantic cable projects. . . . The only things that have changed since then are that the stakes have gotten smaller, the process more bureaucratized, and the personalities less interesting.

Neal Stephenson, "Mother Earth Mother Board," *Wired Magazine* (1996)

In the most broadly influential narrative about fiber-optic undersea cables to date, Neal Stephenson invokes the Atlantic telegraph cable as a historical origin point for contemporary networks.<sup>1</sup> Comparing the FLAG fiber-optic project to the first transatlantic telegraph, he observes that very little separates the "maniacs" embarking on a high-risk nineteenth-century venture from those then speculating on Internet infrastructure. This comparison would become widespread over the subsequent decade as undersea fiber-optic networks dramatically extended around the world—capacity increased from 1.48 million to 45.1 million voice paths just across the Atlantic.<sup>2</sup> Histories of the first transatlantic cable surfaced in popular non-fiction, in focused narratives such as *A Thread Across the Ocean: The Heroic Story*

*of the Transatlantic Cable* (2002) as well as broad accounts of nineteenth-century technological culture such as *The Victorian Internet* (1998).<sup>3</sup> The cable made appearances on television, in episodes of *Modern Marvels* (2000), *Mission X* (2002), *Driven to Invent* (2005), and the PBS documentary *The Great Transatlantic Cable* (2005). Novels including *Signal & Noise* (2003) and *Gifts and Bones* (2006) used the transatlantic cable laying as both backdrop and source of narrative tension.<sup>4</sup> Undersea telegraph cables were the subject of numerous radio, newspaper, and magazine publications, as well as museum exhibitions in the Smithsonian, the National Library of Medicine, and the Danish Post and Tele Museum.<sup>5</sup> During a period in which media depicted the Internet as both new and immaterial, promoting fantasies of dot-com expansionism into uncharted and unoccupied digital waters, histories of the Atlantic Cable recast emerging networks as deeply historical infrastructures.

This cycle of cable narratives was not the first moment that the transatlantic telegraph had become a popular technology phenomenon. The story of the original Atlantic Cable (constructed in 1858 or 1866, depending on who is telling the story) has been relayed frequently over the past 150 years—it is referenced more than any

other single cable, permeating numerous disciplinary and institutional contexts. It appears in telecommunications industry materials as well as in histories of electrical engineering. In primary and secondary school education, the Atlantic telegraph has been an important pedagogical tool illustrating the long history of communications technologies. There are a number of children's books on the cable, from Nathan Adele's *The First Transatlantic Cable* to Samuel Carter's *Lightning Beneath the Sea*.<sup>6</sup> The story extends through popular culture, stretching back to Jules Verne's *Twenty Thousand Leagues Under the Sea* (1870), in which the Nautilus submarine stops to visit the cable at the bottom of the ocean.<sup>7</sup> The transatlantic telegraph forms a disappearing point for telecommunications history, the primary discursive site at which the American public has come to learn about and understand undersea cables and, by extension, the roots of our contemporary global communications infrastructure.

Often retold at moments when communications technology is in transition, the Atlantic Cable story has helped to orient publics in the midst of transformations in global communications. In the 1950s, simultaneous with the development of undersea telephone cables, a number of popular and scholarly histories on the Atlantic Cable were published, including Bern Dibner's *The Atlantic Cable* (1959) and Arthur C. Clarke's *Voice Across the Sea* (1958), the latter of which is split between the transatlantic telegraph cable and the transatlantic telephone cable.<sup>8</sup> The cable surfaced in a television episode of *Calvacade of America* (1954), the *American Adventure* radio show (1955), and other texts including *Three Miles Deep: The Story of Transatlantic Cables* (1958).<sup>9</sup> Like the narratives of the late 1990s, these overtly focused on the transatlantic telegraph, but in doing so, they also offered a historical context that could help publics to understand the role of the new undersea telephone network. By establishing continuity between past and present, these texts might have distilled anxiety about the emergent form's disruptive potential.

At the turn of the millennium, a cycle of Atlantic telegraph stories rooted the Internet in a long history of cable laying, again appearing to

temper the newness of technological transition. In many of these texts, however, the choice of the Atlantic Cable as the historical precedent and the specific features of their narratives reflected a relatively new set of economic practices in the cable industry. In the first section of the chapter, I lay out the dominant tropes of these stories, which by and large mirrored contemporary discussions of the dot-com boom more than the typical practices of cable history. They tend to portray cable laying as an act of heroism driven by motivated individuals—in this case, American businessman Cyrus Field. The project is a product of entrepreneurial work, made possible thanks to Field's immense efforts in fundraising. In turn, global interconnection is depicted as a progressive, democratic, and primarily capital-driven process. These stories synced nicely with the emerging mode of fiber-optic development at the time, in which many of the existing systems had been privatized and cables were becoming newly dependent on entrepreneurial activity. As a result, the Atlantic Cable narratives served as a cultural context in which publics could understand a second potentially disruptive economic transition—the expansion of privatization and venture capital across the telecommunications market—as a long-standing activity dating back to the 1850s.

Given the history of cable communications, this use of the Atlantic Cable and Cyrus Field's work as the historical context for today's infrastructure is misleading. In the second section of this chapter, I argue that even though entrepreneurial activity played a significant role in the first transatlantic link, since that period, global cable communications have more often been driven by cartels and national monopolies, and intertwined with the interests of global news agencies, strategic efforts to consolidate empire, and investments of states and militaries. Rather than situate the worldwide extension of fiber-optic systems in relation to the recent analogue systems of the 1980s, the Cold War cable build-out of the 1960s, or the worldwide expansion of telegraph systems in the late nineteenth century, these narratives focus in on an exceptional case in cable development, misdirecting attention from the technology's monopolistic and strategic

uses. Instead, reinforcing ideologies of the heroic American entrepreneur and the success of free-enterprise capitalism, these texts underscored calls for further investment by private cable companies.

As it unpacks the meanings of these historical narratives about undersea cables, this chapter engages in an archaeology of contemporary networks, moving down into the infrastructures of the Internet and linking them to historical networks of exchange.<sup>10</sup> Along with the other texts in this collection, this helps to counter the myth that media ever arise entirely anew, and instead reveals their precedents in existing forms.<sup>11</sup> The cycle of Atlantic Cable stories discussed here, which link old and new systems of exchange in the public imagination, themselves engage in this kind of historical endeavor. In a sense, we might think of these stories as a popular network archaeology, one that reframed the Internet as both a network of submarine telecommunications cables and a historical infrastructure, at the very moment when discourses of dematerialization were at their height. Long before stories about data centers, server farms, and tubes began to populate the coverage of digital media, these texts offered a materialist imagination of the Internet.<sup>12</sup> A critical attention to their features, however, reveals that in drawing a line of connection between Field's 1866 Atlantic Cable and the fiber-optic systems, they help to naturalize the relatively new claims of private, corporate investors in contemporary cable laying. As Erkki Huhtamo and Jussi Parikka observe of historically oriented media studies, at times the "past has been visited for facts that can be exciting in themselves, or revealing for media culture at large, but the nature of these 'facts' has often been taken as a given, and their relationship to the observer and the temporal and ideological platform he or she occupies left unproblematic."<sup>13</sup> In many of the Atlantic Cable narratives of the late 1990s, the chosen historical facts disconnected the fiber-optic cable network from its roots in Cold War consortium-based structures and instead embedded it in contemporary ideologies about entrepreneurial new media development.

These were neither the only portrayals of the Atlantic Cable nor the only histories of

fiber-optic systems. Other possible reference points and protocols for connection arose, at times inspired by the original discourse around the Atlantic Cable itself. In the last section of this essay, I discuss two novels that offer counterexamples to the dominant version of the 1990s Atlantic Cable story. In John Griesemer's novel *Signal & Noise* (2003) and Barbara Murray's *Gifts and Bones* (2006), the cable's ties to heroic protagonists, capitalist ideology, and the supersession of the Atlantic Ocean are contested, even if the narratives ultimately fail to offer alternate historical comparison points. These representations point to other historical nodes and structuring protocols that we could use to interconnect today's networks with the past, ones that might instead link Internet infrastructure to the pitfalls of entrepreneurial systems, the history of monopolistic and strategic practices, and the instability of our signal traffic.

### Heroic, Entrepreneurial, Nationally Driven Networks

Most of our global Internet transmissions are not routed through the air, as our increasingly mobile and wireless technologies would lead us to believe, but under the ocean along relatively few fiber-optic transoceanic routes. These transoceanic optical backbones were first constructed in the late 1980s, but it was not until the late 1990s and the early 2000s that a boom in cable construction established the foundations for the high-bandwidth global Internet we experience today. While in the previous decades, few authors paid attention to the Atlantic Cable, at the turn of the twenty-first century there was a concentrated emergence of popular narratives about the original telegraph system. Almost always, these histories compared the old networks to contemporary ones, projecting the first telegraph cable as a precedent for Internet infrastructure. The PBS-produced *American Experience* documentary, *The Great Transatlantic Cable* (2005), frames the story in the opening seconds: "A century before the Internet, Cyrus Field would attempt to wire the world." The film then ends by noting that

since the initiation of this cable, direct communication between the US and Europe has never been broken: "even today," the narrator voices, "most traffic between the US and Europe is carried by transatlantic cable." Similarly, *Last Chance Trans-Atlantic*, a 2002 episode of the *Mission X* television show, tells us, "Today, a network of ocean cable connects the continents. Optic fiber cable allows 100 million telephone conversations simultaneously. But it would all have been unthinkable had it not been for the enterprising zeal, determination and innovative energy of Cyrus Field and his 'Victorian Internet.'" The epilogue of John Steele Gordon's book *A Thread Across the Ocean* offers a historical summary that likewise situates the Internet's origins in the Atlantic Cable. Noting that each new cable technology experiences a shakedown period where companies explore how to maximize profit, he observes that this is a fact "as true of the Atlantic cable in the 1860s as it would be of the Internet in the 1990s."<sup>14</sup> While the texts did not delineate causal chains between old and new cable systems, they used emergent networks to frame the Atlantic telegraph story and, in doing so, called attention to the Internet's historical and material dimensions.

These stories took on a role beyond simply representing the technological past. They legitimated certain technological practices in the present—the dominant tropes in the popular discourses of the Atlantic Cable resonated with and functioned to support contemporary calls for private cable development. Almost all of the Atlantic Cable narratives in this cycle situate the cable's origins in the heroism of American entrepreneur Cyrus West Field. Focusing on Field, many of the stories take the form of what Robert C. Allen and Douglas Gomery term the "great man" account of technological history: an account that depicts the evolution of a technology as driven by the breakthroughs of individual men, who are positioned as the primary causal forces driving technological change. Allen and Gomery suggest that this model is particularly appealing owing to its combination of "an ethos of individual achievement, with technological progress, relatable in terms of high drama."<sup>15</sup>

Indeed, heroism has been used to frame the Atlantic Cable narrative across historical periods and national contexts. An article written for an Australian telecommunications journal in the 1970s remarks:

One of the most heroic sagas of all telecommunications history is found in the story of the first bridging of the Atlantic by the telegraph. It is a story of ten years of continuous, courageous effort in the face of repeated failure, of fortunes being gambled on what must have seemed to most a lost cause, of men braving great physical dangers as well as public ridicule time and time again, and persisting until success was at last achieved.<sup>16</sup>

In the narratives of the late 1990s, Field is almost always the protagonist: his personal rise to success is often intertwined with that of the cable itself. For example, the press information framing the television documentary *Last Chance Trans-Atlantic* tells us that the laying of the Atlantic Cable "was a story of near superhuman effort, daring and innovation. It was the vision of one man, who overcame adversity as he experienced the adventure of his life."

The most overt example of this pattern can be seen in *A Thread Across the Ocean*, which traces the fight of Cyrus Field as he pushes on, despite the large odds against him, to secure financing for a transatlantic cable.<sup>17</sup> Field's personal enthusiasm and drive are situated as the primary causal thrust in the cable's development. The book ends with the statement that Field "laid down the technological foundation for what would become, in little over a century, a global village."<sup>18</sup> When not chronicling Field's contribution, the book focuses almost exclusively on other heroic individuals, including engineers William Thompson and Charles Bright, as well as the engineer for the *Great Eastern* cable ship, Isambard Kingdom Brunel. The narrative structure of *A Thread Across the Ocean* is oriented around each of these characters' rise to greatness, and the drama is generated by the obstacles they overcome. For example,

after describing the first failed Atlantic Cable attempt, the history turns to a short segment on the investigation of its causes, which are attributed to engineer Dr. Edward Whitehouse's poor technical decisions. Immediately after this section, rather than transition to how the causes of failure were addressed, it instead deviates into a long description of the design of the *Great Eastern*, the largest ship built during that period, and the single-minded drive of its builder. Despite the fact that the first cable's failure resulted from Whitehouse's decisions rather than the boat's size, the sheer motivation of the two technology builders is understood as naturally overcoming the obstacles in each other's plotlines. The structure of this narration implies that the cable is laid correctly *because* of the drive of the *Great Eastern*'s inventor rather than the development of a better technology. In *A Thread Across the Ocean*, intertwined, heroic stories of the drive to build larger-than-life technologies (whether a cable or a ship) organically evolve to produce "global" communications technology.

While in eighteenth-century British culture, as Christine MacLeod has argued, the "hero of invention" began to be publicly celebrated, Field is distinct as he was not an inventor but an entrepreneur, a fact highlighted by most of the Atlantic Cable narratives.<sup>19</sup> In *The Victorian Internet*, Tom Standage writes, "Nobody who knew anything about telegraphy would be foolish enough to risk building a transatlantic telegraph; besides, it would cost a fortune. So it's hardly surprising that Cyrus W. Field, the man who eventually tried to do it, was both ignorant of telegraphy and extremely wealthy."<sup>20</sup> This observation—that had Field actually known anything about cable laying, he probably never would have taken up the project—is also made in *The Great Transatlantic Cable* and *Transatlantic Cable: 2500 Miles of Copper*, an episode of *Modern Marvels* broadcast in 2006. In these texts, Field becomes a hero due neither to invention nor to production but rather to his pursuit of a risky business endeavor and his experience as a salesman. The causal forces that motivate his success (and the success of the cable project) are a capitalist drive and a corresponding

ignorance of technology (though, notably, the narratives rarely tell us where the capital comes from).

The focus on Field as entrepreneur is often paired with a celebration of the American influence on the project. In *The Great Transatlantic Cable*, the narrator opens with the launch of the first failed transatlantic cable of 1858. A sequence of images cuts from the USS *Niagara* sailing, to the American flag flying above the ship, to a close panning across the coil of cable stored beneath deck. The voice-over narrates, "In the summer of 1858, the USS *Niagara* went to sea. Below decks, the war ship carried an extraordinary cargo: 1,000 tons of copper wire wrapped in enormous coils." The film then cuts to a young man standing on the coiled cable and looking up to the ship's hatch. His hands are firmly on his hips, and sunlight shines down on his face. The voice-over continues, "The vessel also carried a thirty-eight-year-old, self-made millionaire named Cyrus Field." The inference to be drawn from this aural and visual transition is that Field, as much as the cable, might be considered the ship's precious cargo. Left out completely from this opening narration of "Cyrus Field's Transatlantic Telegraph" is the much more dramatic story of the other half of the cable. This part of the cable was carried on the British HMS *Agamemnon*, which hit huge storms on the high seas. The cable was severely tangled during the storm, and the captain even considered discarding it to save the ship. The choice to follow the USS *Niagara* in the plot, however, helps to frame the cable laying as an American endeavor. Similarly, the *Modern Marvels* episode begins by paralleling Field, the cable's "creator," with the cable itself. It suggests that like the cable, which lies deep and unknown in the "sludge" of the ocean floor, Field, "a man once called by historians the greatest American," is now unknown by most Americans. The recognition of both Field and his cable is positioned as a crucial part of understanding American history. The fact that almost all of the engineering, resources, and expertise came from the British is hardly acknowledged. Instead, in these television documentaries, Field's capitalist drive is portrayed as the primary causal force in

the establishment of the Atlantic Cable, which, as a result, is a distinctly American success.

The conclusion of the Atlantic Cable narrative is almost always framed as the overcoming of international tensions between the British and the Americans, and a subsequent establishment of global, democratic networks. Gordon writes, "Indeed the entire 1857 attempt to lay the Atlantic cable was nearly as much an exercise in diplomacy between the two countries directly involved as it was a technological and commercial undertaking."<sup>1</sup> He traces several points where the cable laying might have been cut short as a result of misunderstandings between the Americans and the British. *The Great Transatlantic Cable* also closes with this message: the cable "helps to cement Anglo/American culture and it helps to create really what you might call the Victorian world, which is united by this cable." The recent cycle of Atlantic Cable narratives draw selectively from the discourses surrounding the original telegraph networks, which, as Paul Kennedy observes, imagined a global system growing out along commercial routes between capital cities, "weav[ing] them into one international system, with many countries sponsoring the projects and enjoying benefits."<sup>2</sup> Robert Pike and Dwayne Winseck trace this as a "utopian view of globalization," in which the world was taken as the unit of reference and the public was seen as the beneficiary of the free flow of information.<sup>3</sup> Following this view, the Atlantic Cable narratives portray the cable as promoting peaceful and democratic interaction, and as a technology that—thanks to an American entrepreneur—sets the foundation for the "global village" we live in today.

### Atlantic Cable Limits

While the tropes highlighted in the narratives above—the heroism of Cyrus West Field, American entrepreneurial activity, and democratic interconnection—are certainly parts of the Atlantic Cable's history, they do not make up the entirety of its story and are marginal when one takes a broader view of cable history. A number of historians have contested the overwhelming

focus on Field as a singular hero and have pointed attention to the other actors involved. For example, a 2008 Institution of Engineering and Technology Seminar on historical transatlantic communication introduced a variety of other contributors and starting points.<sup>4</sup> Donard de Cogan suggests that Field's dominance might be related to his own textual production:

The cliché "the winners get to write history" could probably be aptly attributed to Cyrus Field. There is hardly a history on the subject of the trans-Atlantic cables that does not put him at centre stage and not without justification. He was an excellent self publicist and the "History of the Atlantic Telegraph" first published by his brother in 1866 certainly strengthened his claim . . . the popular history ignores the fact that the scientific and technical efforts were due to the contributions of many others who should have a share in an achievement which completely changed the pace of world communications.<sup>5</sup>

De Cogan proposes that more attention be paid to the people of Ireland and Valentia, since subsequent isolationist policies in these regions have obscured their contribution to the transatlantic link. Other historians suggest that the technological expertise of Lord Kelvin, the industrial motivations of the cotton industry, and the crossing of the Irish Sea might also constitute significant causal forces in establishing the transatlantic connection. Ted Rowe credits Frederic Gisborne, the man who started to build a telegraph line to the edge of Newfoundland, with "begin[ning] the groundwork for the greatest engineering feat of the century."<sup>6</sup> Hugh Barty-King argues that the Atlantic Cable was realized thanks to Englishman John Pender's financial contributions and business expertise.<sup>7</sup> Earlier popular histories had sidestepped Field's contribution as well. For example, John Merrett writes in *Three Miles Deep*:

The cable story is largely British. Nearly all the pioneers were British, the capital was raised in Britain, and the first cable was



made in Britain. And we are not finished with the story yet. The cable is still the fastest and surest means of transatlantic communication. The newest one was laid only a year ago.<sup>28</sup>

In this book, released two years after the first transatlantic telephone cable, the Atlantic Cable is mobilized as an origin point for the coaxial British system. The Atlantic Cable narratives from the late 1990s and early 2000s, however, direct focus almost exclusively to Cyrus Field and American entrepreneurship.

The Atlantic Cable itself is not a natural origin point for narratives about contemporary undersea cables. Other possible starting points could be Charles Wheatstone's early attempts at undersea telegraphy, Samuel Morse's experiments in New York Harbor in 1843, or the English cable laid between Dover and Calais by John and Jacob Brett in 1850 (the first international undersea cable proven capable of transmitting a message) or 1851 (the first international undersea cable open to the public). These events, like the Atlantic Cable narrative, have been mobilized at various historical moments for specific ideological ends. The 1850 cable was celebrated in 1950 as the centenary of undersea cable communications. Submarine Cables Ltd. used this opportunity to highlight their own contributions to the cable network and their manufacture of over 400,000 miles of nautical cable.<sup>29</sup> Cable & Wireless staged and publicized a series of around-the-world messages that highlighted the versatility of their cable network. There was also a Cable Centenary Exhibition held at the British Science Museum.<sup>30</sup> The use of the 1850 cable helped to direct attention to the history of cable technology and the British contribution to its development. Again, none of these events were the subject of such extended popular discourse in the late 1990s and early 2000s. Similarly, one could also start a history of undersea cables with the 1858 Atlantic Cable, the first to prove that a transatlantic link was technologically feasible. Stories starting with the 1858 cable (as with the 1850 cable) often aim to establish Britain as a driver of technological progress. The 1866 cable is often chosen as the

origin point in popular American texts, however, because it is the moment when commercial traffic was first sustained across the Atlantic, an origin point that then reinforces the significance of the cable as a commercial technology and America as a site of entrepreneurial activity.

If we take the quantity of cables laid along any given route as the single index of importance, then the overwhelming concentration on the Atlantic route might be justified.<sup>31</sup> However, the importance of this route is based on an analytic frame that privileges the examination of relationships between major Western powers (specifically between the US and England). Moreover, the selection of the Atlantic Cable as precedent for *global* networks is problematic because the North Atlantic route is an exception to the way that cables were laid throughout the world in the late 1800s and early 1900s. During this period, almost all cable companies were granted landing concessions (rights to exclusively land their cable in a certain location) so they could maintain a monopoly along their routes. In the North Atlantic there were almost no exclusive concessions granted in the later 1800s, and as a result, relative to the rest of the world, competition was tighter, rates were lower, and intercontinental communication was more accessible. In addition, even in the case of the Atlantic Cable, government guarantees to use its services constituted a significant percentage of the official support and made the endeavor possible, yet in the popular cycle of Atlantic Cable narratives national investment and interests are elided (instead focusing on the entrepreneur's activities).

Scholars have shown how, despite the increase in accessibility of information for some, for the majority of global routes, even with regulation, monopolies were typical, rates were higher, and there was a very low level of accessibility (only governments, news bureaus, and large businesses could afford to regularly use the cable). Most cables were managed by cable cartels, dominated by global news agencies, subsidized by states, laid according to strategic efforts to consolidate empire, and shaped by diplomacy in complex ways.<sup>32</sup> As Pike and Winseck observe, contrary to the democratic, progressivist view

that characterized early discourse about the cables, the British government "provided a certain vision of world electronic communications centred around the linking of the British empire," and cartels dominated the cable business from the beginning.<sup>43</sup> Today, many cable routes are laid directly over former colonial routes, providing service that reinforces positions of dominance and is implicated in histories of colonization and militarization, particularly in the Pacific Rim.

If popular narratives historicized contemporary networks in relation to cables across the Pacific, the Indian Ocean, or the Red Sea, they would more likely be informed by events such as colonial conquest. Or, likewise, a story could have started with a number of other early international cables, linking England to Germany, Ireland, Russia, and Holland. While these projects have been documented in historical scholarship, none have been addressed in this recent cycle of popular cable histories. During the late 1990s and early 2000s, there were no popular narratives focusing on the transpacific cables, either British or American. Of the books released during this period that do focus on the Pacific region, almost all follow the Russian-American telegraph expedition, which charted a cable route to unite America and Europe by way of Siberia.<sup>44</sup> This endeavor competed with the transatlantic cable expeditions and, like the transatlantic cable project, was understood in terms of US-Europe relations. Looking at the communication networks of the Pacific or across the globe might have made apparent the fact that global (rather than US-European) communications were possible in part owing to military interest, monopoly practices, and the domination of the global news agencies, and that their political structure, in which cables were kept inaccessible via high rates, meant the majority of cables were limited to an exclusive clientele until the twentieth century.

## Industry Ties

The Atlantic Cable, while exceptional in cable history, serves as an ideal historical reference point for a subset of cable networks in 1990s and early

2000s. The fiber-optic boom of the late 1990s was one of the only other periods, aside from the early Atlantic crossings, in which smaller companies and independent entrepreneurs significantly drove cable development. In his essay, Neal Stephenson makes this parallel clear: "In many ways [the fiber-optic boom] hearkens back to the wild early days of the cable business. The first transatlantic cables, after all, were constructed by private investors who, like FLAG's investors, just went out and built cable because it seemed like a good idea."<sup>45</sup> From the 1950s through the early 1980s, undersea cable development had operated in a consortium model, where state-owned or affiliated telecommunications carriers would meet, determine a forecast for traffic, and based on their projected needs would pool money to build a transoceanic cable. A nationally affiliated cable supplier would then build this system. These were enormous and time-intensive projects. It was this monopoly structure that had made possible the *global* extension of undersea telephone networks.

From the late 1980s to early 1990s, a number of major social and technological shifts significantly altered the cable industry. The development of fiber-optic cables led to an extraordinary increase in international capacity. Simultaneously, movements toward deregulation and privatization in communications meant that cable building was no longer restricted to nationally owned and affiliated telecommunications companies, and a number of new players emerged, many of whom were American. This led to a boom of new cable development, a rush for financing, and a new interest in publicity. By the end of the 1990s, the vast majority of international data transmission was carried via undersea cables; they became a foundation for the global Internet. Nonetheless, fiber-optic cable was often extended along routes that had been established years before.

In discourses about the transatlantic telegraph, private companies, many of whom who were newly interested in creating publicity, found a narrative model that helped to articulate their distinction from the historical model of cable development. The Atlantic Cable narrative

formed an ideal reference point in publicizing their current technological endeavors. Hibernia Atlantic sponsored and hosted a black-tie event at the New York Historical Society in 2008 commemorating the first transatlantic telegraph cable, an event facilitated by Atlantic-Cable.com manager Bill Burns. The event even featured a speech by the great-great-grandson of Cyrus Field. After the event, a slideshow of photos from the event was posted on the company site (including photographs of Hibernia's chairmen next to the grandson of Cyrus Field), and a number of news articles were written that linked their work on fiber-optic cables to Field's endeavor, highlighting the continuity between the routes of the early telegraph and those of the fiber-optic systems. Invoking the heroism of Cyrus Field in these materials and on their website lent credibility to Hibernia's efforts to fundraise for future projects and to gain more customers.

For Hibernia Atlantic, as well as across the industry, the Atlantic Cable narrative continues to provide a rich narrative and iconographic library for companies to visualize the historical origins of the private cable industry. Stephenson's *Wired* article was "required reading" at TeleGeography, an Internet infrastructure market research firm, for years.<sup>36</sup> The *Great Eastern*, the giant cable ship that laid the 1866 cable, was the cover image for a calendar distributed at the 2009 Pacific Telecommunications Council's conference on communications infrastructure. The cable industry magazine *SubTelForum* featured a set of articles that reflected on the original Atlantic cables. The cable supply company TyCom helped to fund the Smithsonian exhibition on undersea networks. In turn, stories about fiber-optic Atlantic cables mirrored the historical narratives about Field, emphasizing (as did many of the dot-com narratives) the heroic, solitary origins of the cables in certain skilled entrepreneurs. For example, a *New York Times* article from 1999 traces the ascendance of Gary Winnick, described as "a financier with little experience in telecommunications" and "a master salesman with a quick wit," who took on a project to lay a fiber-optic cable across the Atlantic and quickly

became "the telecommunications industry's newest, and by far one of its richest superstars."<sup>37</sup>

While the Atlantic Cable narrative is productive in that it suggests that "new" media technologies exist in relation to a longer history of infrastructure, the mobilization of this history during the dot-com boom, and in particular the focus on Cyrus Field's entrepreneurial activity, provides only a partial understanding of fiber-optic infrastructure. The previous sections outlined its critical limitations: it positions cable development as driven by heroes and American free-enterprise capitalism, avoiding histories of corporate and national control and the extensive investment in British technology. It also suggests that this origin led to a democratic, progressivist system where equal powers were united, thus avoiding the long history of the use of cable to solidify imbalanced relationships of power. In this discursive environment, popular histories of the Atlantic Cable functioned to legitimate fiber-optic companies' activities as a heroic American entrepreneurial practice and, in an indirect way, to cultivate support for further capital investment in extending new lines across the ocean.

## Rewriting the Atlantic Cable

To close, I briefly turn to two fictional Atlantic Cable narratives that offer alternative visions to the heroic work of cable construction, its reinforcement of capitalist ideology, and its significance as an origin story for democratic global communications. *Signal & Noise* (2003) and *Gifts and Bones* (2006) critique the assumption that international democratic connection is simply initiated with the Atlantic Cable. Instead, they attribute meaning to various kinds of transmissions that are sent along the cable, and expand the range of different worlds that cables interconnect. These texts drew from, and existed in conversation with, the existing Atlantic Cable narratives. John Griesemer's *Signal & Noise*, for example, was inspired by Stephenson's "Mother Earth, Mother Board" article. He recounts the origin of the novel:

On Sundays, we have "dump day." . . . There's a big dumpster filled with magazines and periodicals. I saw a copy of *Wired* on top of all the magazines. . . . The cover story was by Neal Stephenson. . . . At one point, he goes into a long digression about how, if you think the fiber-optic operation is great, then for sheer amazing engineering, capitalistic skulduggery, and over-the-top nautical bravado, you should check out the story of the laying of the first transatlantic cable. He sketches it in with tales of Cyrus Field, Isambard Kingdom Brunel, the whole gang. He practically was saying, "This would make a great novel." It's what I said, anyway.<sup>48</sup>

*Signal & Noise* narrates the "capitalistic skulduggery" of the transatlantic cable-laying attempt of 1858, focusing on the engineer Chester Ludlow, a composite of several actual people involved in the production of the cable. In the process it displaces both the 1866 cable and Cyrus West Field as a central motivator for the story. As the narrative begins, Chester is uninterested in the public dimension of the cable (its story) and merely wants to work on its design. He is coerced by one of the investors to narrate a Phantasmagorium show that will help raise money for the cable project. While he is initially reluctant, Chester soon emerges in the role of performer and is transformed into the cable project's celebrity. While newspapers frame Chester as a hero connecting two nations, the narration makes clear that this heroism has been manufactured alongside the cable itself. For example, when one of the investors contemplates the cable's opening ceremony, he dictates a song about the endeavor to his assistant: "The cable lies under the ocean. . . . Thus Ludlow brought England to me!" His assistant stops him and asks, "'Ludlow brought England,' sir . . . Isn't it Mr. Field actually who is chairman of the syndicate?" The investor answers, "'Mr. Field' doesn't scan. . . . Besides, Ludlow's the man they're all going to fall for. Same as they did with the Phantasmagorium. It was Ludlow. He has the look. The fair-haired son. The matinee idol. Write down 'Ludlow.'"<sup>49</sup>

The cable show is portrayed as an act of artifice, a "trick" to get people to "gamble" their money. As Chester Ludlow gets caught up in his own role as the "connector," he loses the sense of purpose with which he began the expedition. After the two cable-laying attempts in 1858 and 1865, Ludlow chooses not to go on the ship that carries the final cable of 1866. The novel's plot leaves out this final journey and, in doing so, leaves out the moment of final technological connection.

The collapse of space and time that Chester proclaims the transatlantic telegraph will bring does not enable characters to connect democratically or equitably but instead puts distance between them. Chester's work on the cable draws him away from Franny, his wife, and he has an affair. Even his new lover questions what kinds of signals the cable can really transmit, telling him that "[a]ll your work on these cables, and still all anyone can send is signals in a code no one can speak."<sup>50</sup> Throughout the novel, there is an uncertainty that dots and dashes can be significant in themselves, without a code that somehow translates them into meaningful connection. *Signal & Noise* suggests that other kinds of signals, ones emerging from the depths of the ocean or from a spirit world beyond, might be equally valuable. For example, Otis Ludlow, Chester's brother, spends his time at a cable station in Ireland monitoring a broken transatlantic cable. While the other employees perceive the shifting levels of electricity as noise, Otis documents messages that come through the broken cable, a cord that connects them to a "greater world" and allows his deceased father and others from the spirit world to communicate. He writes in his journal: "The entire ocean speaks to us through the cable. Its storms and magnetisms beat out a message. We have given meaning to certain patterns, but who is to say there aren't patterns in the rest of what flickers through the light."<sup>51</sup> If the traditional histories of the Atlantic Cable have been used to narrate the ways in which the grandiose aspirations of heroic men, technology, and capitalist ideology have overcome nature and the ocean in the service of democracy, *Signal & Noise* offers a rewriting of the Atlantic Cable story that challenges these basic assumptions and

suggests that what we think is noise might actually be signals occurring in the absence of decoding mechanisms—signals written in a “code no one can speak.”

As was true for *Signal & Noise*, the author of *Gifts and Bones* reported that she benefited from the existing circulation of Atlantic Cable narratives and resources. In particular, Barbara Murray cited *A Thread Across the Ocean* as an inspiration for her book. Here the story of the 1857 transatlantic cable attempt is loosely tied to a murder investigation that takes place in the town of St. John's, Newfoundland—the narrative displaces both the 1858 and 1866 cable projects to focus on an initial voyage, one that made it only 300 miles before the cable snapped. The cable's break is a major narrative event, initiating causal trajectories that lead to blackmail and a murder as the men on the ship continue to blame each other for its failure. As in *Signal & Noise*, throughout *Gifts and Bones* the determination of characters' agency is muddled as lines of communication are initiated. The two men on the ship fail to determine the reasons for the cable's break, and two young girls fail to determine responsibility for the subsequent murder. Ghosts rather than cables transmit the most narratively significant information, and Morse code is the language they use to communicate to the living. Listening to them, the young girls are able to discover the truth about the past. Thus, the code meant for cable transmission connects isolated Newfoundlanders to a spiritual world before it links them to other nations.

These two novels open up new causal trajectories beyond the heroic work of Cyrus Field, the financing of the project, and the construction of large-scale ships. Re-narrated in these texts, the Atlantic Cable takes on other meanings. It is a technology that enables characters to move across the boundary separating the living from the dead, rather than across oceans. It is a technology of separation and miscommunication rather than correspondence. The texts direct us toward the transmissions carried by cable systems instead of assuming that the system itself will bring interconnection. While these fictions of technological history do not develop a more “accurate” history

of global networks, they launch important critiques of the ideologies underlying the traditional Atlantic Cable narratives, introduce new questions (such as “What kinds of transmissions are conveyed on the cable?” and “What are its actual effects?”) to discussions of undersea networks, and offer alternative ways to understand the history of current fiber-optic systems.

## Conclusion

Digital networks have often been represented as a distributed or rhizomatic form, and less frequently as a material infrastructure of cables, towers, and warehouses. When undersea cables do become the subject of popular technology discourse, the stories that are produced hold surprisingly close to a classical narrative model whereby a single hero struggles against an ocean to unite nations into a “global” and “democratic” society. This scarcity of information and lack of diversity in representation make the few popular narratives about undersea cables all the more significant in helping us to understand our relationship to transnational Internet infrastructure. How publics perceive undersea cable networks will affect their opinions about the policies that govern them and the ways in which they should be deployed. If cables are exclusively portrayed as privately funded enterprises, publics may be less liable to see the historical significance and continuing importance of state support, for example.

Tracking some of the most widely circulated texts on the Atlantic Cable, this chapter shows how popular technological histories produced during the dot-com boom became a site for the articulation of capitalist ideologies and the nation and underscored industrial calls for more private investment in undersea cables. These narratives skewed the representation of cable history, which has long been linked to large corporate monopolies, the intervention of strategic and colonial interests, and the perpetuation of structural inequality. As a counter to these discourses, we might consider other fictional texts in which the tropes of the Atlantic Cable have

been questioned and revised. These narratives, alongside popular histories of cables that might be written based on Caribbean, Pacific, or Indian Ocean networks, could form the basis for a new popular discourse about undersea cables, one that moves away from free-enterprise capitalism as a primary causal force and from the portrayal of democratic interconnection as smoothly following from cable interconnection. We might also move toward the inclusion of historical events that connect colonial or Cold War cables to today's networks, a broader range of actors involved in cable development, or even a consideration of how processes of disconnection or miscommunication help to constitute undersea systems.

## Notes

1. The article is cited as inspiration in a number of other texts and is regularly referenced in the cable industry. See, for example, Jonathan Reed Winkler, *Nexus: Strategic Communications and American Security in World War I* (Cambridge, MA: Harvard University Press, 2008).
2. Barney Warf, "International Competition Between Satellite and Fiber Optic Carriers: A Geographic Perspective," *The Professional Geographer* 58, no. 1 (February 2006): 1–11.
3. See John Steele Gordon's *A Thread Across the Ocean: The Heroic Story of the Transatlantic Cable* (New York: Walker, 2002). This cycle of Atlantic Cable narratives occurred at the same time as the release of new academic research and new historical resources, including scholarly texts such as Donald R. Tarrant, *Atlantic Sentinel: Newfoundland's Role in Transatlantic Cable Communications* (St John's: Flanker Press, 1999), Gillian Cookson's *The Cable: The Wire That Changed the World* (Sutton: Stroud, 2003), and Chester G. Hearn, *Circuits in the Sea: The Men, the Ships, and the Atlantic Cable* (Westport, CT: Praeger, 2004). Several early cable narratives (written in 1858, 1865, and 1866) were reprinted and re-released in 2005. See Henry M. Field, *History of the Atlantic Telegraph* (New York: C. Scribner, 1866); John Mullaly, *The Laying of the Cable, or the Ocean Telegraph* (New York: D. Appleton, 1858); William Howard Russell, *The Atlantic Telegraph* (New York: Day & Son, 1865). Other popular non-fiction books included I. J. Davis's *Fleet Fire: Thomas Edison and the Pioneers of the Electric Revolution* (New York: Arcade, 2003). The Internet also made these resources available to the public and to the creators of popular texts. One of the most critical sites was Atlantic-Cable.com, established by Bill Burns in 1995, which served as a compilation page for research materials about the cable (and has subsequently been expanded to all undersea cables). As the Atlantic Cable was Burns's original interest, the site continues to be named after it, a framing that reinforces the primacy of Atlantic routes to undersea communications.
4. John Griesemer, *Signal & Noise* (New York: Picador, 2003); Barbara Murray, *Gifts and Bones* (Toronto: Soames Point Press, 2006).
5. The Smithsonian's "The Underwater Web: Cabling the Seas" (2001–2002) traced the intertwined history of telegraph, telephone, and fiber-optic cables; "The Once and Future Web: Worlds Woven by the Telegraph and Internet" (2001–2002) was displayed by the National Library of Medicine; "Online—150 Years on the Net" (2004) was exhibited by the Danish Post & Tele Museum.
6. Nathan Adele, *The First Transatlantic Cable* (New York: Random House, 1959); Samuel Carter, *Lightning Beneath the Sea: The Story of the Atlantic Cable* (New York: G.P. Putnam's Sons, 1969).
7. Jules Verne, *Twenty Thousand Leagues under the Sea* (1870; reprint, New York: Oxford, 1998).
8. Bern Dibner, *The Atlantic Cable* (Norwalk, CT: Burndy Library, 1959); Arthur C. Clarke, *Voice Across the Sea* (New York: Harper & Bros., 1958).
9. John Merrett, *Three Miles Deep: The Story of Transatlantic Cables* (London: H. Hamilton, 1958).
10. Nicole Starosielski, Braxton Soderman, and cris check, "Introduction: Network Archaeology," *amodern* 2 (2013). <http://amodern.net/issues/amodern-2-network-archaeology/>.
11. Charles Acland, ed. *Residual Media* (Minneapolis: University of Minnesota Press, 2007); Lisa Gitelman, *Always Already New: Media, History, and the Data of Culture* (Cambridge, MA: MIT Press, 2006); Erkki Huhtamo and Jussi Parikka, eds. *Media Archaeology: Approaches, Applications, and Implications* (Berkeley: University of California Press, 2011).
12. See Andrew Blum, *Tubes: A Journey to the Center of the Internet* (New York: Harper Collins, 2012); Tom Vanderbilt, "Data Center Overload," *New York Times*, June 8, 2009.
13. Huhtamo and Parikka, *Media Archaeology*, 1–2.
14. John Steele Gordon, *A Thread Across the Ocean: The Heroic Story of the Transatlantic Cable* (New York: Walker, 2002), 21.

15. Robert C. Allen and Douglas Gomery, *Film History: Theory and Practice* (Boston: McGraw Hill, 1985), 110.
16. Lawrence Durrant, "A History of Submarine Cables," *Contact Magazine: The House Journal of OTC Australia* (March 1976): 5.
17. This trend has an earlier precedent in stories that directly parallel Field's biography with the adventure of the cable. See Philip Bayaud McDonald, *A Saga of the Seas: The Story of Cyrus W. Field and the Laying of the First Atlantic Cable* (New York: Wilson-Erickson, 1937); Samuel Carter, *Lightning Beneath the Sea: The Story of the Atlantic Cable* (New York: G.P. Putnam's Sons, 1969).
18. Gordon, *Thread Across the Ocean*, 215.
19. Christine MacLeod, *Heroes of Invention: Technology, Liberalism and British Identity, 1750–1914* (Cambridge: Cambridge University Press, 2007).
20. Tom Standage, *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-line Pioneers* (New York: Walker, 1998), 75.
21. Gordon, *Thread Across the Ocean*, 85.
22. Paul M. Kennedy, "Imperial Cable Communications and Strategy, 1870–1914," *English Historical Review* 86, no. 341 (October 1971): 738.
23. Robert Pike and Dwayne Winseck, "The Politics of Global Media Reform, 1907–23," *Media Culture Society* 26, no. 5 (2004): 644.
24. The conference situated itself as the 150th anniversary of the 1858 cable, the first cable that physically connected the two continents (although only for a short time), and temporally displaced the stories that center on Field and the events leading up to the 1866 cable.
25. Donard de Cogan, "Insights Into the Landing of the 1858 Telegraph Cable," in *Institution of Engineering and Technology Seminar on the Story of Transatlantic Communications* (Manchester, UK: Institute of Engineering and Technology, 2008), 37.
26. Ted Rowe, *Connecting the Continents: Heart's Content and the Atlantic Cable* (St. John's, Newfoundland: Creative Publishers, 2009), 3.
27. Hugh Barty-King, *Girdle Round the Earth: The Story of Cable and Wireless and Its Predecessors to Mark the Group's Jubilee 1929–1979* (London: Heinemann, 1979), 22.
28. Merrett, *Three Miles Deep*, jacket cover.
29. "A Century of Undersea Communications," *The Zodiac: The Submarine Cable Service Paper* 41, no. 490 (January 1950), n.p.
30. "Cable Centenary," *The Zodiac: The Submarine Cable Service Paper* 41, no. 499 (October 1950): 5.
31. Other historicisms with less focus on Europe-US relations and more focus on the global spread of technology make different kinds of observations. For example, Hugh Barty-King writes, "The impact on the other islands in the Caribbean Sea of the opening in December 1866 of the International Ocean Telegraph Company's line from Havana under the Gulf of Mexico to Florida, giving communication to the US and Europe in hours instead of weeks, was considerably greater than Anglo-American's success in connecting the two sides of the North Atlantic." Barty-King, *Girdle Round the Earth*, 28.
32. Bernard Finn and Daqing Yang, eds. *Communications Under the Sea: The Evolving Cable Network and Its Implications* (Cambridge, MA: MIT Press, 2009); Daniel Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850–1940* (New York: Oxford University Press, 1988); Daniel Headrick, *The Invisible Weapon: Telecommunications and International Politics, 1851–1945* (Oxford: Oxford University Press, 1991); Kennedy, "Imperial Cable Communications and Strategy"; David Paul Nickles, *Under the Wire: How the Telegraph Changed Diplomacy* (Cambridge, MA: Harvard University Press, 2003); Robert Pike and Dwayne Winseck, *Communication and Empire: Media, Markets, and Globalization 1860–1930* (Durham, NC: Duke University Press, 2007).
33. Pike and Winseck, "The Politics of Global Media Reform," 661.
34. John Dwyer, *To Wire the World: Perry M. Collins and the North Pacific Telegraph Expedition* (Westport, CT: Praeger, 2001); George Kennan, *Tent Life in Siberia: An Incredible Account of Siberian Adventure, Travel, and Survival* (New York: Skyhorse, 2007); G. Stewart Nash, *The Last Three Hundred Miles* (Prince George, BC: Caitlin Press, 2001); Rosemary Neering, *Continental Dash: The Russian-American Telegraph* (Ganges, BC: Horsdal & Schubart, 2000).
35. Neal Stephenson, "Mother Earth Mother Board," In *Wired Magazine* 4, no. 12 (December 1996).
36. "Palcoteleography," *TeleGeography Research*, (May 28, 2012). [www.telegeography.com/products/telegeography-insider/palcoteleography/2012/05/28/mother-earth-mother-board/index.html](http://www.telegeography.com/products/telegeography-insider/palcoteleography/2012/05/28/mother-earth-mother-board/index.html), last accessed October 27, 2012.
37. Andrew Pollack, "Winnick Weaves Single Transatlantic Cable Into Communications Empire," *New York Times*, May 18, 1999.
38. Interview with the author, June 22, 2012.
39. Griesemer, *Signal & Noise*, 338.
40. *Ibid.*, 289.
41. *Ibid.*, 32.